



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant: T. Allan Hamilton

Assignee: ZiLOG, Inc.

Title: "System And Method For Providing An Improved Standby Mode
For Infrared Data Transceivers"

Appl. No.: 09/135,154

Filing Date: August 17, 1998

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Art Unit: 2635

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May 9, 2006

BRIEF FOR APPELLANT

Appellant hereby appeals to the Board of Patent Appeals and Interferences from the decision of the Primary Examiner dated November 25, 2005, which was the second rejection of Claims 50-60. A Notice of Appeal dated January 27, 2006 was received by the Patent Office on January 30, 2006.

An Amendment under MPEP 1206 is filed along with this Appeal Brief to cancel Claim 50.

A Petition for a two-month extension of time (along with the 37 CFR 1.17(a)(1) extension fee of \$450.00) is submitted along with this Appeal Brief, allowing Applicant up to May 30, 2006 (four months from the January 30, 2006 date upon which the Patent Office received the Notice of Appeal under MPEP 1205.01) to file this Appeal Brief.

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C. REAL PARTY IN INTEREST

The real party in interest is the assignee, ZiLOG, Inc., as named in the caption above.

D. RELATED APPEALS AND INTERFERENCES

Appellant knows of no other appeals or interferences that could directly affect or be directly affected by or have a bearing on the decision by the Board of Patent Appeals and Interferences (the "Board") in this pending Appeal.

E. STATUS OF CLAIMS

The original claims in the application have been canceled. Claims 50-60 were present in the application as of the Amendment dated November 10, 2004. Claims 50-60 were rejected in the next Office Action of March 28, 2005 (listed as rejected in the Office Action Summary). Appellant thereupon filed an RCE and added additional "Objective Evidence of Non-Obviousness" in the form of a Declaration of Mr. Douglas McIntosh so that this additional evidence would be considered by the Board in this Appeal. Claims 50-60 were again rejected in the next Office Action dated November 25, 2005. Claims 51-60 (see the listing of the claims below - Claim 50 is canceled by an MPEP 1206 Amendment) are the subject of this Appeal. Appellant appeals the rejections in the Office Action of November 25, 2005 to the Board of Appeals.

F. STATUS OF AMENDMENTS

An Amendment under MPEP 1206 is filed along with this Appeal Brief to cancel Claim 50. No other amendments have been filed subsequent to the last rejection of the claims in the last Office Action of November 25, 2006.

G. SUMMARY OF CLAIMED SUBJECT MATTER¹

An infrared communication standard known as IrDA (Infrared Data Communication) is used to communicate between various handheld electronic devices such as cellular telephones, personal digital assistants (PDAs), digital cameras, and laptop computers. Each IrDA-enabled device includes an IrDA transceiver (receiver and transmitter) portion as well as some sort of processor for performing the protocol processing of IrDA stack layers above the physical layer. As is conventionally known, the IrDA stack is a "stack" of multiple protocol processing layers. The claims on appeal are directed to the IrDA transceiver portion of an IrDA system, and are not particularly drawn to the higher layers of the IrDA stack portion² of an IrDA system.

As set forth in Appellant's specification, when a conventional IrDA device is not actively engaged in IrDA communications, the device is said to be in a "standby" or "sleep" mode (3: 3-10; 2:15-16). The transceiver portion of the device is in a full-power condition, even though the overall IrDA device is sleeping. The transceiver is doing no work beyond simply listening, yet the transceiver imposes the same power drain that a fully active transceiver would draw (3:10-17).

When IrDA communication is to occur, a transmitting IrDA device transmits what is called a "discovery signal" to the receiving IrDA device in a complex IrDA discovery procedure. The discovery signal is in a particular 9600 baud frequency band. The two devices then engage in a "discovery procedure" that involves communication back and forth between the IrDA devices in the 9600 baud band. The result of the discovery procedure is that the receiving IrDA device "wakes up" for commencement of IrDA communications (3:10-13). After the discovery procedure, the IrDA devices typically switch their communications to a higher baud rate. Unfortunately, the IrDA transceiver portion of the IrDA

¹ The following summary pursuant to 37 CFR §1.192(a)(5) is a concise explanation of the claimed subject matter and is to be read in light of the disclosure. This summary does not limit the claims (See MPEP §1206). A summary by necessity leaves out detail. See the specification for a complete and accurate description of the claimed subject matter.

² The embodiment of Figure 5 includes a "communication controller" 46 being involved in the generation of the "power-up" signal.

device to be waken consumes substantially the same amount of power prior to waking up as it does after the IrDA device is fully functional and communicating.

An embodiment of Appellant's novel IrDA transceiver system 70 is illustrated in Figure 6 (replicated below).

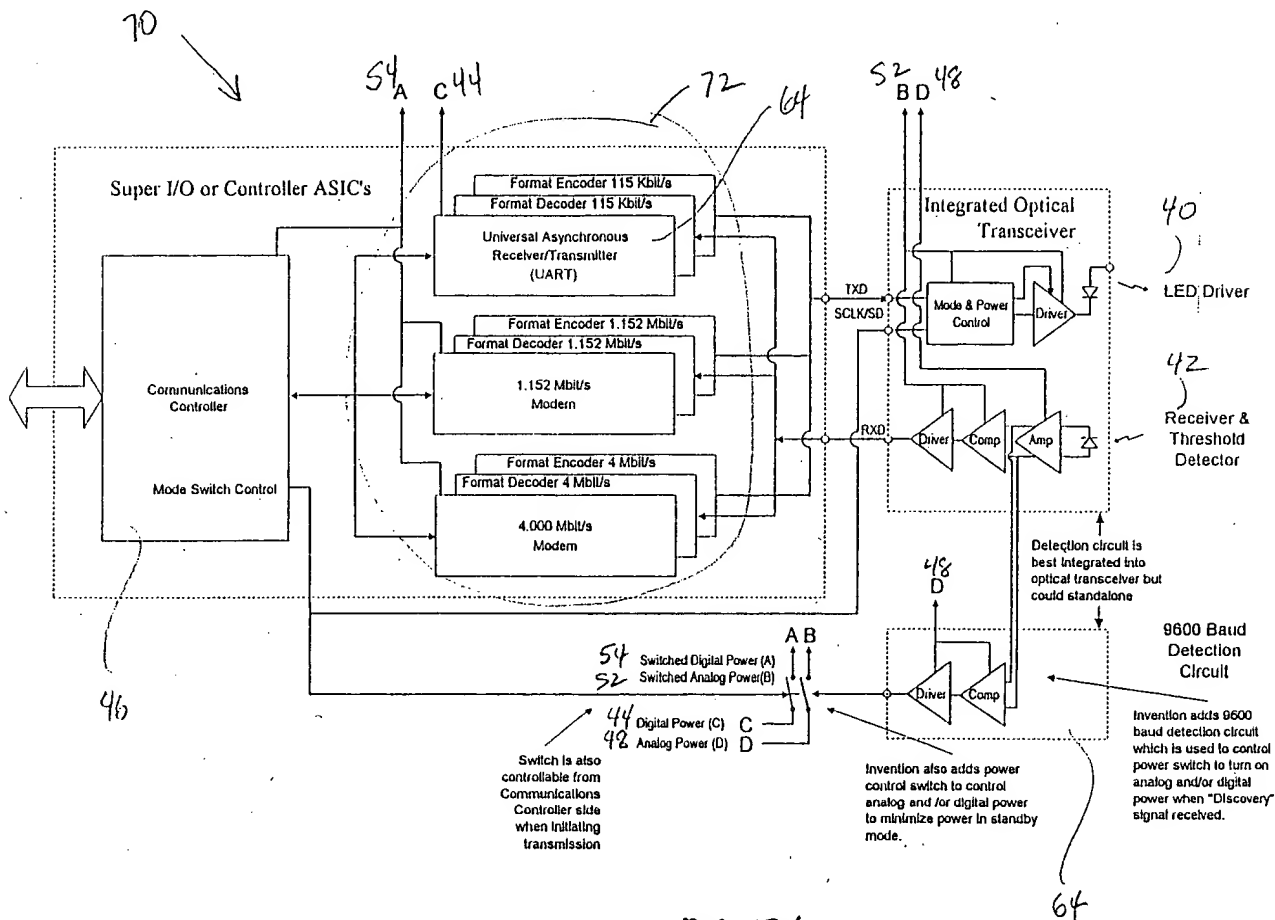


FIGURE 6

Transceiver system 70 includes functionality in a large dashed box to the left of the diagram (see Figure 6 above) as well as an IrDA transceiver module in a smaller dashed box to the right of the diagram. The IrDA transceiver module is labeled "Integrated Optical Transceiver". The transceiver includes an infrared transmitter 40 and an infrared receiver 42. In addition to the left and right dashed boxes, there is a smaller box to the bottom of Figure 6. This box is labeled "9600 Baud Detection Circuit". As explained in text on the diagram, the 9600 Baud Detection Circuit is, in one example, "integrated into" the optical transceiver box above it. As indicated by the numeral 64 that identifies the 9600 Baud Detection Circuit, this circuit is one example of what is referred to in the specification as an

"IrDA discovery signal detection circuit". (See, for example, another example of the IrDA "discovery signal detection circuit" labeled 64 in Figure 5.)

Initially, the IrDA transceiver module of Figure 6 is in a low-power mode. The specification states that the "low-power standby circuitry consumes much less than 1 (one) mA of current" (10: 6-7). The two "power control switches" illustrated to the left of the 9600 Baud Detection Circuit in Figure 6 are open. "Analog power" D that is supplied to the "9600 Baud Detection Circuit" is not supplied as "switched analog power" B through the open rightmost "power control switch" to the "comparator" and "driver" in the receiver 42 of the IrDA transceiver module. The rightmost power control switch is open. The IrDA transceiver, and the comparator within the receiver 42, are in a low-power mode.

Next, the IrDA discovery signal detection circuit 64 of Figure 6 detects a 9600 baud signal. This is one way of detecting an IrDA discovery signal. Circuit 64 outputs a "power-up" signal which extends out of the IrDA transceiver module. Note the terminal symbol on the left edge of the 9600 Baud Detection Circuit box. As explained above, the 9600 Baud Detection Circuit box of Figure 6 is integrated into, and is a part of, the "transceiver" box above in Figure 6. The "power-up" signal causes the "power control switches" to close. When the rightmost power control switch closes, analog power D that was powering the 9600 Baud Detection Circuit is now also coupled through the rightmost switch onto the "switched analog power" B line and is supplied to the comparator ("Comp") and the driver in receiver 42. The comparator in the receiver 42 is therefore seen to switch from a first low-power state to a second high-power state. Full IrDA signal transmission and receipt is then enabled. As indicated by Figure 6, IrDA data can then pass through the enabled comparator and driver of the receiver 42 and out of the RXD terminal of the IrDA transceiver module and on to the other portions of the overall IrDA transceiver system 70.

Figure 5 (replicated below) illustrates another example of an IrDA transceiver 70 that has low-power mode and a full-power mode. Only a single infrared receiver 42 is required (9:17-18).

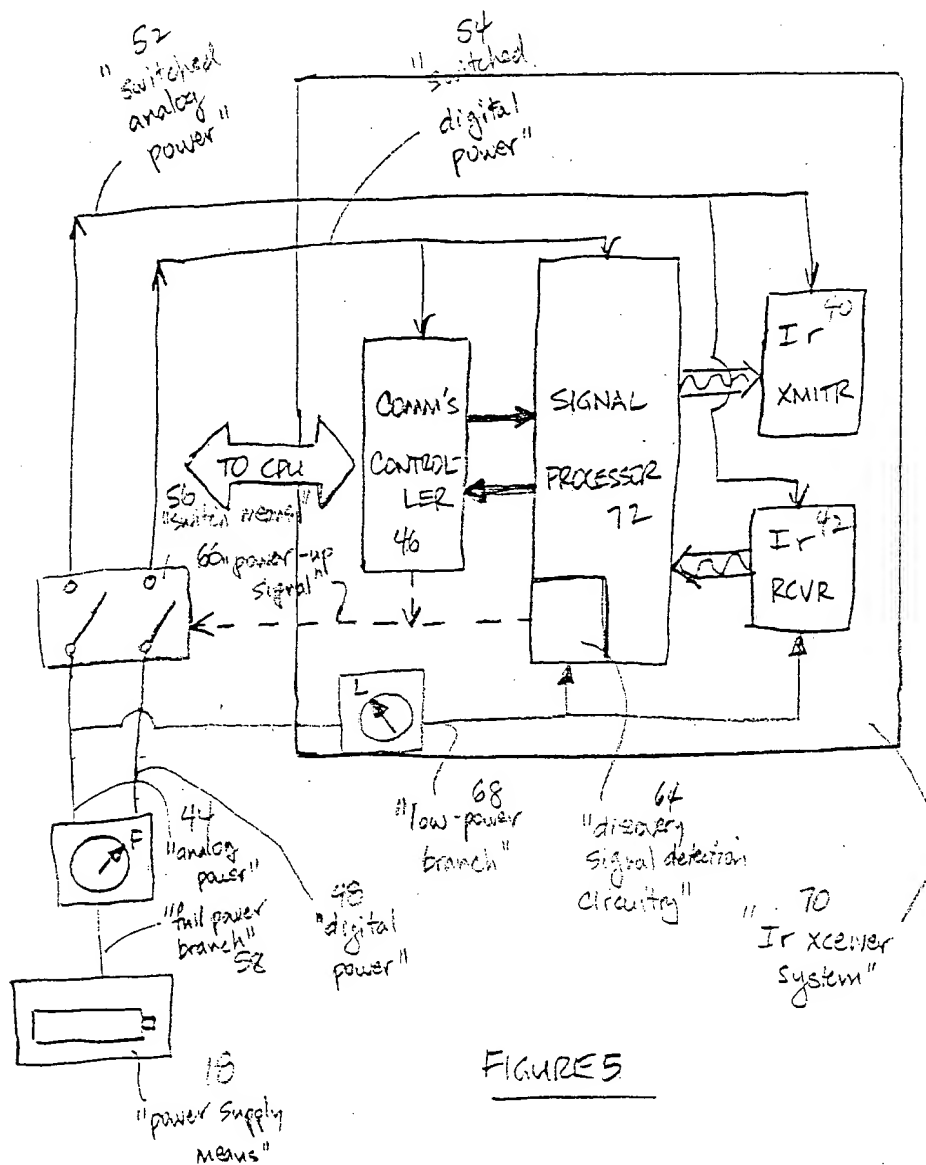


FIGURE 5

Receiver 42 and the "discovery signal detection circuitry" 64 portions of the IrDA transceiver initially receive power from low-power branch 68 as is evident from Figure 5. The transceiver is initially in what the specification calls "a low-power standby state" (9:12-14). When circuit 64 recognizes a discovery signal (9:14), then it asserts a power-up signal 66 on the dashed line extending out of circuit 64

to the left. This causes the "switch means" 56 to energize "switched analog power" 52, thereby supplying switched analog power to receiver 42 (9:14-17). The transceiver is then in the full-power mode (the term "full-power" is used in the summary on page 4, lines 7 and 10; in connection with Figure 2B, page 6, line 19 and page 7, line 1; in connection with Figure 5, on page 8, line 12; in original claims 10, 12 and 15; and in the abstract, page 14, lines 7 and 10).

Means-Plus-Function: Claim 59 (and Claim 60 that depends from it) recites a "means for enabling full infrared signal transmission and receipt upon detection of a 9600 baud IrDA discovery signal". In Figure 4, the corresponding structure includes the "discovery signal detection circuitry". The power-up signal 66, the "switch means" 56, and the "switched analog power" 52 connection to the receiver 42 are optionally included. In Figure 5, the corresponding structure includes the "discovery signal detection circuitry" 64. The "power-up signal" 66, the "switch means" 56, and the "switched analog power" 52 connection to receiver 42 are optionally included. Communications controller 46 can also be involved in the generation of "power-up signal", for example by decoding information in the discovery signal to identify it as a discovery signal as opposed to just detecting a baud rate like the "9600 Baud Detection Circuit" of Figure 6 does. All these variants perform the recited function of the means element. In Figure 6, the corresponding structure includes the "9600 Baud Detection Circuit". The rightmost "power control switch" and the "switched analog power" B connection to the comparator ("Comp") in the receiver 42 are optionally included as corresponding structure. The scope of the means-plus-function recitation of Claim 59 is not limited to the corresponding structures set forth in the specification, but rather under 35 U.S.C. §112, ¶6 extends to "equivalents thereof".

H. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

(1) The rejection of Claims 51-60³ under 35 U.S.C. 103 as being unpatentable over four references: 1) Kohler (USP 5,115,236), 2) the IRDA specification as discussed by applicant on page 3 of the specification, 3) Selin (EP Publication 0772307), and 4) Kulha (USP 5,973,611).

(2) The rejection of Claims 51-60⁴ under 35 U.S.C. 103 as being unpatentable over two references: 1) Nykanen (USP 5,706,110), and 2) Kulha (USP 5,973,611).

³ Claim 50 is canceled by an Amendment Under MPEP 1206 filed along with this Appeal Brief.

⁴ Claim 50 is canceled by an Amendment Under MPEP 1206 filed along with this Appeal Brief.

I. ARGUMENT

1. The First Ground of Rejection:

a) The first ground of rejection is repeated below:

Claims 50-60 are rejected under 35 U.S.C. 103(a) as obvious over Kohler (USP 5,115,236) and the IRDA specification as discussed by applicant on page 3 of the specification and the EP publication Selin (EP 0772307) and Kulha (5973611).

Kohler teaches a device (Fig. 2) for reducing power consumption in infrared-enabled applications having power supply means and transceiver system means forming a circuit including switch means (Col. 1, lines 7-28 and Col. 2, lines 30-54), comprising: (wake-up) signal receiver (RC receiver in Fig. 2) and power actuator module (control voltage output 41 in Fig. 2), said module configured to recognize incident Ir discovery signals and responsively activate said switch means (Col. 3, lines 53-68 through Col. 5, lines 1-22). Kohler teaches an infrared receiver (Fig. 2) and discovery signal detection circuitry configured to recognize the power level of the infrared "discovery signals" incident to said receiver and emit a power-up signal to said switch means (Fig. 2; Col. 4, lines 28-56). Kohler teaches that the power-up (message) signal can be instigated by user input (keyboard 8 in Fig. 3) via the transmitter portion of the transceiver system (Col. 5, lines 30-48). It is noted the Kohler device requires interpretation to determine if a wake up signal is being received. Therefore the received signal is interpreted in order to determine if a wake up signal has been received. The applicant admits that the IRDA standard discovery signal is used as a wake up signal. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have used an IRDA discovery signal to control the wake up elements of the Kohler communication system.

In an analogous art, Selin shows a communication device that uses a sleep mode to reduce power consumption in the devices. Selin uses a specially coded signal or sequence to wake up a receiving communication unit. See col. 4 lines 45-55 and col. 9 lines 32+. Selin teaches that most of the activities of the device are switched off in order to conserve power. In the above system, the receiver (and a portion of the processor that recognizes the wake up signal) must remain on to enable waking up of the device. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have switched off the claimed elements as unessential elements while providing power to the receiver and associated wake up discovery processor as suggested by Selin in the Kohler system because such would provide improved power conservation.

In an analogous art, Kulha shows a signal processor that is used to received a signal and generates a wake up or power up signal when the appropriate over the air signal is received. By providing a sleep mode the

receiver advantageously saves power. By providing the processor with a portion that remains awake to receive wireless signals and wake up the rest of the processor the device can be provided in a single, simple circuit thus reducing space required on the circuit board. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have used the sleep mode detecting section of a processor as shown by Kulha to reduce power consumption and reduce the space taken up by the circuitry of the IR communication device discussed above.

b) Claim 51 (and Claims 52, 53, 56, 57, 59 and 60).

i) No ***Prima Facie*** §103 Rejection - Rejection Incomplete.

Because the logic of the §103 rejection is difficult to follow, the rejection is summarized so that it can be discussed below. Upon reading of the statement of rejection above, it is noticed that the §103 rejection starts off presupposing that one of ordinary skill is considering the Kohler reference. The §103 rejection correctly notes that Kohler involves what is called a "wake up" signal. Once some similarities between Kohler's system and Appellant's IrDA system are outlined, the §103 rejection brings up the IrDA specification (also referred to here as the IrDA standard). The §103 rejection states that "applicant admits that the IrDA standard discovery signal is used as a wake up signal." Presumably due at least in part to the use of the same word "wake up" in the two documents, the §103 rejection asserts that "it would have been obvious" to combine the two such that the "IrDA discovery signal" would control "the wake up elements" in Kohler.

The §103 rejection is utterly incomplete in that it does not apply the references to each claim, and to each recited element in each claim. As a result, it simply cannot be determined from the statement of rejection which particular reference it is that the Examiner believes discloses particular claim elements. Despite being asked by the undersigned in the previous prosecution, the Examiner failed to apply the references to each claim on an element-by-element basis. Appellant brings up that point here in connection with the rejection of Claim 51, because it is not understood why the Examiner feels it is necessary to go on and add the third and fourth references (Selin and Kulha) to the rejection of

Claim 51. What recitation of Claim 51 is it, if any,⁵ that the Examiner finds missing from his hypothetical combination of Kohler and the IrDA standard? The incompleteness of the rejection makes it difficult to respond to the rejection, at least with respect to Selin and Kulha and Claims 51, 52, 53, 56, 57, 59 and 60. The incompleteness of the rejection makes it difficult to treat the rejection in this Appeal Brief. Reversal of the rejection is requested because the rejection is not a *prima facie* rejection under 35 U.S.C. §103.

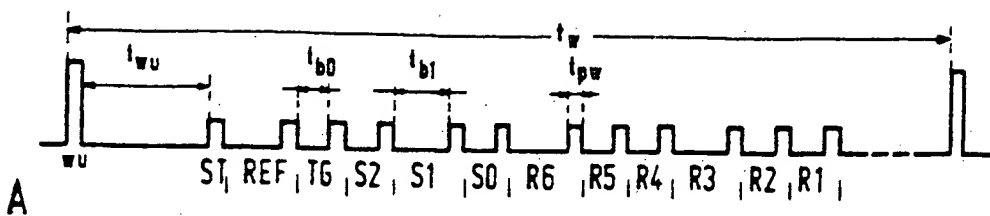
ii) Combining Kohler and IrDA Was Not Obvious.

Notwithstanding the Selin and Kulha references, Appellant strongly disagrees with the rejection's underlying premise that "it would have been obvious" to have combined Kohler and the IrDA specification teaching. Contrary to what the rejection says, neither Kohler nor the IrDA specification provides any motivation or suggestion to "control the wake up elements of Kohler" using an IrDA discovery signal. How and why there is no motivation or suggestion to combine is set forth in items one through five below:

1) Starting With Kohler, The Combination Is Not Suggested

If one of ordinary skill were reading Kohler, there would have been nothing that would have suggested or motivated or taught one of ordinary skill to think that the Kohler reference could apply to IrDA. IrDA does not have a "pulse that is distinguished from other pulses by its energy content". An IrDA discovery signal does not have special high amplitude pulse that distinguishes it from other IrDA pulses or signals. Kohler, on the other hand, relates to a special pulse that is "distinguished from other pulses by its energy content". Figure 1A of Kohler, reproduced below, shows the wake up pulse, denoted "WU".

⁵ The rejection is a blanket and vague rejection of eleven claims, including four independent claims. It is assumed that the third and fourth references are included because they are needed to show elements of claims other than Claim 51.



Note the high amplitude of Kohler's special wake up pulse WU. There is no such thing in IrDA. Because there is no such thing in IrDA, one of ordinary skill would not have been prompted or suggested by Kohler to use the Kohler circuit in an IrDA environment. If, as the rejection posits, one of ordinary skill were studying the Kohler patent, there would have been nothing to lead that person to IrDA or to the IrDA specification.

2) Starting With IrDA, The Combination Is Not Suggested

What if rather than being initially concerned with Kohler as in item one above, the person of ordinary skill was initially considering an IrDA system?⁶ In the event that one of ordinary skill was already concerned with IrDA and was studying the IrDA standard, there also would have been nothing to suggest or motivate or teach the person of ordinary skill to modify Kohler to work in an IrDA environment. Again, Kohler would not have appeared to one of ordinary skill to work in an IrDA environment. One of ordinary skill reading the IrDA standard would know that IrDA has no high amplitude pulse that is distinguishable by its energy content. Accordingly, one of ordinary skill would not think that the Kohler teaching relating to special high amplitude pulses would work with IrDA. The only other suggestion in Kohler about detecting a wake up pulse is a suggestion that Kohler's wake up pulse could be distinguished from other signals due to the special long pulse space that follows the wake up pulse. Kohler states:

"It has been stated in the forgoing that the wake-up pulse is preferably distinguished from the other pulses in the message by its energy content. This is not necessary. To obtain this distinction it is in principle sufficient if the pulse space t_{wu} shown at A in FIG.1 is considerably larger the t_{b0} and t_{b1} ." (Kohler, 6:37-42).

⁶ There is no such §103 rejection in the Office Action. This situation is considered, however, to show that under no order would the Kohler/IrDA combination have been suggested.

The problem with this teaching is the same as with the teaching relating to high amplitude. There is no such distinguishing long pulse space in an IrDA discovery signal, so one of ordinary skill would not think that the Kohler teaching would work with IrDA. Neither the Kohler reference, nor the IrDA standard, provides any motivation or suggestion to combine Kohler and the IrDA standard. The general interest in Kohler of reducing power consumption would not have been adequate to not have caused one of ordinary skill to think that Kohler could be applied to IrDA.

3) There Is No Recognition Of The Problem In The Prior Art

Very importantly, in applying the Graham v. Deere test⁷ for determining patentability under 35 U.S.C. §103, the differences between the prior art and the claims must be properly considered. In determining the differences between the prior art and the claims, the question under §103 is not whether the differences themselves would be obvious, but whether the claimed invention as a whole would have been obvious⁸. The Court of Appeals for the Federal Circuit has repeatedly explained that discovering the source of a problem is part of the intention "as a whole". For example, the Federal Circuit has stated:

"It should not be necessary for this court to point out that a patentable invention may lie in the discovery of the source of a problem even though the remedy may be obvious once the source of the problem is identified. ***This is part of the "subject matter as a whole" which should always be considered in determining the obviousness of an invention under 35 U.S.C. 103.***⁹

"The discovery of a problem calling for an improvement is often a very essential element in an invention correcting such a problem; and though the problem, once realized, may be solved by use of old and known elements, this

⁷ In order to make a proper patentability determination under §103, the Patent Office must: 1) determine the scope and content of the prior art, 2) ascertain the differences between the prior art and the claims; 3) resolve the level of ordinary skill in the pertinent art, and 4) evaluate the objective evidence of non-obviousness. See Graham v. Deere, 383 U.S. 1, 148 USPQ 459 (1966).

⁸ Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 218 USPQ 871 (Fed.Cir. 1983); Schenck v. Norton Corp., 713 F.2d 782, 218 USPQ 698 (Fed.Cir. 1983). Also see MPEP 2141.02(V) and In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977).

does not necessarily negative invention" In re Bisley, 94 USPQ 80 (CCPA 1952). The discovery of a problem calling for improvement is a part of the 'subject matter as a whole' inquiry. See In re Kaslow, 707 F.2d 1366, 217 USPQ 1089 (Fed.Cir. 1983). Accordingly, the issue of whether the problem¹⁰ was recognized in the prior art is an important matter for consideration in determining the patentability of Claim 51.

In the present case, there is no recognition whatsoever in any of the cited references that there is any problem with IrDA transceivers or any need to modify an IrDA transceiver. There is no recognition that power consumption of an IrDA transceiver is a problem or could be reduced. Each reference in the §103 rejection of Claim 51 is discussed below to show that none of the references recognizes the problem that Appellant recognized.

Kohler, as described above, nowhere mentions IrDA. Kohler certainly does not mention a recognition that there is any problem with the IrDA transceiver portion of an IrDA system. Not only is there no mention of IrDA or IrDA transceivers in Kohler, but the Kohler wake up pulse and the method of distinguishing it from other signals would not work with, or be compatible with, IrDA.

The "IrDA specification" includes a lot of detail about an IrDA "operational mode", an IrDA "non-operational mode", and a "discovery procedure" involving discovery command frames and different layers of the IrDA stack. Despite all this detail about system level considerations, there is no recognition that a discovery signal can be used to cause an IrDA transceiver module to switch from a low-power mode of the IrDA transceiver to a full-power mode of the IrDA transceiver. There is no recognition in the IrDA standard that there is any problem with IrDA transceivers. The IrDA specification is a high level document

⁹ In re Kaslow, 707 F.2d 1366, 217 USPQ 1089 (Fed.Cir. 1983), citing In re Sponnoble, 405 F.2d 578, 160 USPQ 237 (CCPA. 1969). (emphasis added).

¹⁰ In re Sponnoble, 405 F.2d 578, 160 USPQ 237 (CCPA. 1969); See the endorsement of In re Sponnoble in Cross Medical v. Medtronic, 424 F.3d 1293 (Fed.Cir. 2005); See the recent endorsement of In re Sponnoble in In re Kahn, 441 F.3d 977 (Fed.Cir. 2006); In re Nomiya, 184 USPQ 607 (CCPA 1975); "A patentable invention may lie in the discovery of the source of a problem even though the remedy may be obvious once the source of the problem is identified" In re Zurko, 111 F.3d 887, 42 USPQ2d 1476 (Fed.Cir. 1997).

and does not relate to details of IrDA transceiver design.

Selin (EP 0772307A1) nowhere mentions IrDA and has nothing to do with IrDA. There is no recognition in Selin that there is anything wrong with IrDA transceivers or that IrDA transceivers can benefit from any teaching in Selin. What Selin teaches is another type of receiver that is actually non-operational for relatively long periods of time. The receiver momentarily switches on for a short amount of time so that it can detect if a synchronization pulse is being transmitted. This is not IrDA. The synchronization pulse is not an IrDA pulse. There is not even a hint in Selin about IrDA, and there certainly is no recognition in Selin that there is any specific need to modify an IrDA transceiver within an IrDA system.

The last of the cited references, Kulha (USP 5,973,611), also contains no recognition that there is anything wrong with IrDA transceivers or that there is any need to modify an IrDA transceiver. Kulha is not even remotely related to IrDA. Kulha relates to a hands-free remote entry system for a car or other vehicle. Kulha's system allows a user to lock/unlock doors and arm/disarm an auto theft system of a vehicle. Kulha has nothing to do with IrDA. Kulha certainly does not evidence a recognition that there is any reason to modify an IrDA transceiver or that it could even be done.

The very important conclusion is that not one of the cited references (not Kohler, not the IrDA specification, not Selin, and not Kulha) evidences a recognition of a problem with IrDA transceivers that can be, or should be, remedied. There is no recognition in the cited references that there is anything wrong with conventional IrDA transceivers, or that there is any need to modify an IrDA transceiver module. Appellant asks "Where does the Examiner get the idea to reduce power consumption in an IrDA transceiver module?" That idea is not found in any cited reference. Appellant submits that the Examiner got the idea from Appellant's specification, and then engaged in a hindsight analysis to search the prior art for pieces of art to recreate Appellant's invention. One of ordinary skill in the art at the time of the invention would not have done that. To the contrary, recognition of the problem is part of Appellant's invention. The fact that recognition of the problem was not present anywhere in the prior art means that

there was no sufficient motivation or suggestion or teaching¹¹ to modify a conventional IrDA transceiver.

4) A Vague Generalized Notion That Reducing Power Consumption Is Good If All Else Is Equal Is Not A Motivation

A vague generalized notion that reducing power consumption in electronics is good if all else is equal is not a motivation or suggestion that would have been adequate to lead one of ordinary skill to combine Kohler and the IrDA specification to achieve what is set forth in Claim 51. It would not have been adequate because there would have been no reasonable expectation of success and because there would have been many countervailing considerations. To the first point, there would have been no reasonable expectation of success in that one of ordinary skill would not think that Kohler and the IrDA specification could be combined to amount to a working IrDA compliant device. See the sections above on how Kohler's large energy pulse would not appear to be combinable with IrDA and if it were used would have led away from the claimed invention. To the second point, who is to say that power consumption should be reduced in all situations? Obviously, it should not. Often it is perceived as advantageous to increase performance, and to consume more power in the process. Sometimes it is perceived as advantageous to increase functionality, and to consume more power in the process. Sometimes it is perceived as advantageous to increase reliability or other aspects of a device. Sometimes reducing manufacturing cost is more important to one of ordinary skill than reducing power consumption a trivial amount. Reducing power consumption is not the only concern that would have been in the mind of one of ordinary skill, and to assume that it would have been the primary concern to one of ordinary skill, and then to isolate the person's attention on Kohler and the IrDA specification, is to oversimplify the situation in an improper hindsight analysis. Such a vague generalized concern as reducing

¹¹ "Where an applicant contends that the discovery of the source of a problem would have been unobvious to one of ordinary skill in the pertinent art at the time the claimed invention was made, it is incumbent upon the United States Patent and Trademark Office to explain its reasons if it disagrees. A mere conclusory statement that the source of the problem would have been discovered is inadequate." *In re Peehs*, 612 F.2d 1287, 204 USPQ 835 (CCPA 1980). In the present Appeal, Appellant contends that one of ordinary skill would not have discovered the source of the problem, or even would have recognized that there was a problem at all.

power consumption would not have been adequate to lead one of ordinary skill to Appellant's claimed invention.

5) Picking And Choosing Evidences Non-Obviousness

The non-obviousness of the four-way combination of references is evident when the manner in which the certain aspects of various references must be picked out and combined to the exclusion of other more central aspects of the references¹² is studied. To illustrate the improper picking and choosing, each of cited references is discussed below and other central parts of the references that the Examiner chose to ignore that led away from the combination are identified. For example, a central aspect and thrust of Kohler is a "wake up pulse" that has an especially large power level and is followed by an especially long amount of blank time (see Figure 1, replicated above). If one were for some unsuggested reason¹³ to attempt to apply Kohler to IrDA, the logical result would be system using a large non-IrDA compliant wake up pulse. That is not Appellant's invention. Rather than fairly considering applying Kohler in the IrDA context to involve this straightforward high energy pulse, the hindsight combination involves detecting a discovery signal that has no such distinguishing feature. In fact, the hindsight rejection does not say how it is that a discovery signal can even be detected in the Kohler system if the RC receiver 1 that sends data to processor 4 is disabled. Kohler's processor 4 cannot analyze an incoming signal and determine that it is a discovery signal if RC receiver 1 is unpowered.

A central aspect of Selin is a communication device that cannot receive when it is in a sleep mode. After being disabled for some period of time, the Selin device actually wakes up to full power mode in order to potentially detect an incident signal. If no signal is detected, then the Selin receiver is again disabled. If one were for some unsuggested reason to attempt to apply Selin to IrDA, the most logical and straightforward result would be an IrDA system where the IrDA transceiver is disabled for long periods such that the IrDA transceiver could not

¹² "It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art." Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc., 796 F.2d 443, 230 USPQ 416 (Fed.Cir. 1986), citing In re Wesslau, 353 F.2d 238, 147 USPQ 391 (CCPA 1965).

receive. That is not Appellant's claimed invention. Appellant's invention of Claim 51 involves an "IrDA discovery signal detection circuit that generates a power-up signal upon detection of a 9600 baud IrDA discovery signal" whereupon the power-up signal causes "the operation of the IrDA transceiver module to switch from the low-power mode to the full-power mode". The "IrDA discovery signal detection circuit" is not disabled during the low-power mode, because when a discovery signal is detected the IrDA transceiver switches into the full-power mode. The most logical and straightforward application of Selin to IrDA therefore does not amount to Appellant's claimed invention.

A central aspect of Kulha relates to a hands/free remote entry system for a vehicle. The central aspects of Kulha are so distant from the claimed subject matter that a logical application of Kulha to IrDA is not even easily imagined in hindsight. Accordingly, when the cited references (Kohler, Selin, Kulha) are fairly considered for what their central aspects are, the most straightforward applications of those references to IrDA would have been structures other than what is claimed in Claim 51. How then is it that the §103 rejection weaves through the references, excluding central teachings in each reference, in just the right way so that the various selected pieces fit together to recreate Claim 51? The answer is that the §103 rejection evidences "the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher"¹⁴ (emphasis added). In the case of the instant §103 rejection of Claim 51, the necessity to pick and choose from each reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests exposes the non-obviousness of Claim 51.

6) Objective Evidence of Non-Obviousness

Just because it might be possible to find isolated disclosures that can be combined in such a way as to produce a claimed combination, does not mean that the combination is unpatentable under 35 U.S.C. §103. A hypothetical

¹³ Only the Appellant recognizes and exposes the problem to be solved.

¹⁴ See In re Dembiczak, 175 F.3d 994, 50 USPQ 1614 (Fed.Cir. 1999), quoting W.L. Gore & Assocs., Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed.Cir. 1983).

combination of selected parts of five paper documents from the files of the Patent Office is just a hypothetical combination. The hypothetical combination does not actually exist in the real world. The fact that a hypothetical combination can be made does not necessarily mean that the claimed combination was "obvious" out in the real world. Recognizing this, courts have stated that objective evidence of non-obviousness may often be the most probative and cogent evidence in the record. It may often establish that an invention appearing to have been obvious in light of the prior art was in fact not obvious.¹⁵

In the present case of the invention of Claim 51, the factual situation out in the real world indicates that despite the selected documents identified in the §103 rejection, the claimed invention was, and remains to this day, "non-obvious." Evidence of the factual situation out in the real world is present in the form of two items of "objective evidence of non-obviousness" that are submitted to the Board for consideration: 1) a Declaration of Alan G. Grace, and 2) a Declaration of Mr. Douglas McIntosh. The two items of objective evidence are discussed below.

a. Declaration of Alan Grace.

The declaration of Alan Grace (attached as part of the "Evidence Appendix") sets forth circumstantial evidence of commercial success of the invention. As set forth in the declaration, the declarant, Mr. Grace, has considerable experience in the IrDA transceiver field working at several different companies, is one of only three engineers at Zilog¹⁶ with the title of "Fellow", and is the "principal engineer overseeing the design of all IrDA transceiver modules designed and manufactured by Zilog." The declaration states that "Zilog Inc., for each of the past five years, has sold approximately one million dollars worth of IrDA transceiver modules having the IrDA discovery signal detector circuit". Mr. Grace states that "one customer inquired about purchasing Zilog IrDA transceivers that have the IrDA discovery signal detector circuit. I suggested to the customer that an older Zilog IrDA transceiver module (one that does not have the IrDA discovery signal detector circuit) would be more appropriate for the

¹⁵ Stratoflex, Inc. v. Aeroquip Corp., 218 USPQ 871 (Fed.Cir. 1983).

customer's needs because the older IrDA transceiver module met the customer's performance requirements and it was less expensive than the newer Zilog IrDA transceiver having the IrDA discovery signal detector". Mr. Grace reports that "[t]he customer responded that they wanted the more expensive Zilog IrDA transceiver modules because the more expensive modules had the low-power sleep mode, whereas the older less expensive modules I proposed using did not have the low-power sleep mode." In addition to this one specific example of a customer seeking out the low-power sleep mode, Mr. Grace declares under oath that "I believe that a substantial proportion of Zilog's sales of IrDA transceivers having the IrDA discovery signal detector circuit are purchased at least in part due to the low-power sleep mode capability of those devices." The specific case of a customer insisting on buying more expensive IrDA transceiver modules due to their having the low-power sleep mode, and the belief of Mr. Grace that a substantial proportion of Zilog's sales are at least in part due to the low-power sleep mode together constitute evidence of a clear nexus between the low-power sleep mode and a degree of commercial success.

Second, the "Declaration of Alan G. Grace" sets forth circumstantial evidence that the assertion in the §103 rejection that the invention was "obvious" is false. Mr. Grace states that "it is one of my job responsibilities to keep myself aware of the technical capabilities of the IrDA transceiver module market". Mr. Grace states that "[t]hroughout the past six years, I have endeavored to keep myself informed about all IrDA transceiver modules available on the market, and what their capabilities are". Mr. Grace states "I consider myself well informed and knowledgeable about the capabilities of IrDA transceiver modules that have been on the market throughout the past six years." Mr. Grace states "To my knowledge, no company other than Zilog, Inc. (and Calibre before it) currently produces (or has even produced) an IrDA transceiver module having an IrDA discovery signal detection circuit, a low-power sleep mode and a higher-power normal operation mode, wherein the IrDA discovery signal detection circuit, upon detecting a 9600 baud IrDA discovery signal, switches transceiver operation from

¹⁶ Mr. Grace has since left the employ of Zilog.

the low-power sleep mode to the higher-power normal operation mode".

If, as the §103 rejection asserts, the invention was a mere "obvious" combination of prior art teachings, and if one of ordinary skill were motivated to make the combination as the §103 rejection asserts, then common sense would indicate that numerous companies would probably be producing the advantageous invention. That numerous companies would be producing the advantageous invention would appear all the more likely in view of the fact that Zilog, Inc. has been selling one million dollars worth of the invention each year for five years. The falsity of the notion that the invention was "obvious" is indicated by the fact that, despite the commercial incentive, there is no company other than Zilog, Inc. currently manufacturing and selling the advantageous invention. Accordingly, the factual situation in the real world (as evidenced by the declaration of Mr. Alan Grace) is inconsistent with the assertion that the invention of Claim 51 was "obvious" to one of ordinary skill.

b. Declaration of Mr. Douglas A. McIntosh.

The second item of objective evidence of non-obviousness is a declaration of Mr. Douglas A. McIntosh. Mr. McIntosh is a senior design engineer for Dart Controls, Inc.¹⁷ Dart Controls, Inc. is a company that purchases IrDA transceivers from Zilog (assignee of this patent application). Mr. McIntosh declares that to his knowledge the "Zilog ZHX1403MA115TH is the only IrDA transceiver module on the market that has the low-power sleep mode". The declaration states "I am aware of no company other than Zilog that makes, or has ever made, an IrDA transceiver module having the low-power sleep mode". This statement by Mr. McIntosh supports and tends to confirm the similar statement made by Mr. Grace that Zilog is the only company that makes, or has ever made, an IrDA transceiver module that includes the claimed invention.

Furthermore, Mr. McIntosh states under penalty of perjury¹⁸ that "The low-

¹⁷ Dart Controls Inc. makes and sells motor control accessories and motor drives, tachometers, voltage supplies, speed sensors, signal isolators and other equipment. Dart Controls has produced and shipped more than two million variable speed drives.

¹⁸ In considering the Declaration of Mr. McIntosh, the Board is requested to consider how difficult it is to get a customer such as Mr. McIntosh to sign such a declaration under penalty of perjury. The customer does not stand to gain anything by signing. Moreover, assisting Zilog in obtaining a patent on a device that the customer is using is potentially against the self-interest of the

power sleep mode described above has been and is an important and significant factor in my company's decision to purchase the ZHX1403MA115TH IrDA transceiver" (emphasis added). This is about as clear of a showing of a nexus as you can get between a claimed invention and a sale.

The submitted declarations of Grace and McIntosh therefore constitute real world objective evidence that the hypothetical four-way combination of Kohler, the IrDA standard, Selin and Kulha (if such combination would result in the subject matter of Claim 51) was in fact not "obvious" to those of ordinary skill in the IrDA transceiver art out in the real world. If the subject matter of Claim 51 was in fact "obvious", and if there was an economic incentive to make an IrDA transceiver embodying the claimed invention as the examiner's assertion of a motivation and suggestion to combine would indicate, then it would seem that Zilog would not be the only company selling an IrDA transceiver that includes the claimed invention. One would think that Zilog's competitors would do the "obvious" and make some money selling IrDA transceivers having the low-power sleep mode. The fact that Zilog's competition does not have such a device¹⁹, is strong circumstantial evidence that the making of an IrDA transceiver having the low-power sleep mode was in fact not "obvious" to those of ordinary skill. In fact, it is still not "obvious".

In summary, the Board should reverse the §103 rejection of Claim 51 because:

- 1) despite what the rejection says, if one of ordinary skill were reading Kohler, there would have been nothing that would suggested or motivated one of ordinary skill to think that the Kohler reference could apply to IrDA,
- 2) if one of ordinary skill were concerned with IrDA to start with, there also would have been nothing to suggest or motivate the person of ordinary skill to modify Kohler to work in an IrDA environment,
- 3) there is no recognition whatsoever in any cited reference that there is any problem with IrDA transceivers or any need to modify an IrDA transceiver,

customer. Zilog is grateful to Mr. McIntosh for his forthrightness and cooperation in submitting evidence to the Patent Office in the present patent application.

¹⁹ As far as the undersigned, Zilog, and Mr. McIntosh are aware.

and Appellant's discovery of a problem to be solved is a part of the 'subject matter as a whole' inquiry under 35 U.S.C. 103,

4) the non-obviousness of the Examiner's four-way combination of references is evident when the manner in which the certain aspects of various references must be picked out and combined to the exclusion of other more central aspects of the references is examined, and

5) the objective evidence of non-obviousness indicates that despite the pieces of paper identified in the §103 rejection, the claimed invention was, and remains to this day, "non-obvious" to those of ordinary skill working in the IrDA transceiver arts out in the real world.

For all these reasons, the §103 rejection of Claim 51 is improper. Claims 52, 53, 56, 57, 59 and 60, although they differ from one another in scope, are nonetheless grouped together to simply matters in this Appeal. Reversal of the improper §103 rejection of Claims 51, 52, 53, 56, 57, 59 and 60 by the Board is requested.

c) Claims 54 and 55:

Claim 54 recites "a comparator, the IrDA discovery signal detection circuit causing the comparator to switch from a first low-power state to a second high-power state upon detection of the 9600 baud IrDA discovery signal." Claim 55, which depends from Claim 54, further recites that "the comparator has a power lead, the comparator receiving more power through the power lead in the full-power mode than in the low-power mode".

i) No ***Prima Facie*** §103 Rejection.

The §103 rejection fails to identify any such "comparator" in any cited reference. The §103 rejection does not even use the word "comparator". The §103 rejection does not discuss the comparator limitation of Claims 54-55 at all. Nowhere does the statement of rejection point to any comparator of any kind in any reference, much less a comparator having a low-power state and a high-power state. The §103 rejection set forth above therefore fails to amount to a

prima facie rejection under 35 U.S.C. §103.²⁰

ii) Kohler Does Not Teach The Claimed Comparator.

The "amplifier" 61 in Fig. 2 of Kohler is permanently powered in one power state. Figure 2 of Kohler shows a connection from the upper right power terminal in Kohler's Fig. 2, to the left and then down along the left side of controller 4, and then further to the left and down into the top of amplifier 61. This power connection is a permanent connection. There is no disclosure anywhere in Kohler of any two power modes of amplifier 61. To the contrary, Kohler states that "Due the simple design of this detection circuit 6, it only consumes several micro amperes" (Kohler, col. 4, lines 3-35). This statement would appear to suggest that detection circuit 6 is to remain powered and that keeping it powered in this way is okay because circuit 6 consumes so little power. In addition to not suggesting a "low-power state" and a "high-power state" for amplifier 61, the illustrated permanent power connection combined with the statement about consuming little power would have, if anything, led one away from a "low-power state" and a "high-power state" of a comparator as specifically recited in Claim 54.

Reversal of the incomplete and improper §103 rejection of Claims 54 and 55 is requested.

d) Claim 58:

Claim 58, rather than reciting an "IrDA transceiver module" as in Claims 51-57, more broadly recites an "IrDA transceiver". Moreover, Claim 58, rather than reciting an "9600 baud IrDA discovery signal", recites detection of "a 9600 baud signal". Detecting a "9600 baud signal" is different than detecting a "9600 baud IrDA discovery signal". A signal of 9600 baud, for example, may or may not be an IrDA signal. Support for the recitation of detecting a "9600 baud signal" is found in Figure 6, in the disclosure of the "9600 Baud Detection Circuit".

²⁰ In Applicant's Amendment of Nov. 10, 2004, Applicant explained to the Examiner that the rejection fails to amount to a ***prima facie*** §103 rejection. Applicant respectfully requested a complete explanation of where the recited "comparator" is found in the cited references. Despite the explicit request on the record, the Examiner has still not explained where the claimed "comparator" is found.

There is no disclosure in any of the cited references (Kohler, IrDA standard, Selin, Kulha) of the detection of a baud rate. There is no disclosure in any of the cited references of detection of a 9600 baud rate. Accordingly, no combination of the cited references would entail such a mechanism.

Reversal of the improper §103 rejection of Claim 58 is requested.

2. The Second Ground of Rejection.

a) Statement of the Rejection.

Claims 50-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanen (5706110) and Kulha (5973611).

Nakanen shows a bi-directional IR communication device that includes bi-directional interface with the user, see figure 1 and description of IRDA. Nakanen inherently processes the IR signals received, and inherently includes a controller to control the operation of the transmitter, receiver and power supply. Nakanen shows a power management device, which in a standby mode provides operating power to only a portion of the circuit needed to receive and decode a wake up signal, while switching off the additional circuits. See col. 4 lines 1-15.

Nakanen does not expressly show a battery as the power supply, but one of ordinary skill in the art at the time of the invention would have found it obvious to use a battery as the power supply in the Nakanen device in order to make the device portable or mobile.

In an analogous art, Kulha shows a signal processor that is used to receive a signal and generates a wake up or power up signal when the appropriate over the air signal is received. By providing a sleep mode the receiver advantageously saves power. By providing the processor with a portion that remains awake to receive wireless signals and wake up the rest of the processor the device can be provided in a single, simple circuit thus reducing space required on the circuit board. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have used the sleep mode detecting section of a processor as shown by Kulha to reduce power consumption and reduce the space taken up by the circuitry of the IR communication device discussed above.

b) Claim 51 (and Claims 52, 53, 56, 57).

i) No ***Prima Facie*** §103 Rejection - Rejection Incomplete.

As is the case with the first ground of rejection discussed above, the second ground of rejection is also incomplete. The rejection does not apply the references to each claim, and to each recited element in each claim. It appears that the Examiner only considered the first independent claim, prior Claim 50, applied the references to that claim, and then in an improper blanket rejection.

just asserted that other claims (Claims 51-57) were all unpatentable for the same reason. Appellant explicitly requested in a prior communication²¹ that the Examiner apply the references to the specific recitations of Claims 51-57, but the Examiner has never done so.

The incompleteness of the second ground of rejection makes it impossible to understand the logic of the Examiner's combination and to discuss the merits of that logic. Claim 51, for example, recites an "IrDA discovery signal detection circuit". This circuit generates a specifically recited "power-up signal" upon detection of a "9600 baud IrDA discovery signal". The recited "power-up signal" causes the "IrDA transceiver module" to switch from "a low-power mode" to "a full-power mode". Although the rejection involves a high-level handwaiving discussion, the rejection nowhere identifies where an "IrDA transceiver module" is found in either cited reference. Does the rejection depend on an "IrDA transceiver module" being disclosed in Nykanen? The rejection does not even use the claim term "IrDA transceiver module". Nykanen's PM block receives "indications of activity of the physical layer" (see 4:66 and 4:11-12). Although Nykanen does not say, these indications could be generated by an IrDA transceiver. Is the rejection saying that the recited "IrDA discovery signal detection circuit" is in Nykanen's physical layer in an unmentioned IrDA transceiver? That is the layer that presumably generates the "indication of activity". Or is the rejection saying that the recited "IrDA discover signal detection circuit" is Nykanen's "power management block"? Nykanen's power management block is not in the physical layer, and is certainly not in an "IrDA transceiver module", and does not generate the "indication of activity", so it is doubted that this is what the rejection means. The answer to the question of what in Nykanen the Examiner considers to be the "IrDA discovery signal detection circuit" cannot be answered from reading the rejection.

Then there is the Kulha reference. What is the logic of the rejection in citing this reference? If Nykanen's "power management block" corresponds the "IrDA discovery signal detection circuit" of Claim 51, then is Kulha cited for the

²¹ The section entitled "No Prima Facie §103 Rejection Of New Claims 51-57" in the Amendment

teaching to integrate that power management function as part of a "processor", along with the source of the "indication of activity" signal? Or, if an IrDA transceiver in the Nykanen's physical layer corresponds to the recited "IrDA discovery signal detection circuit", then is Kulha cited for the teaching that the transceiver should somehow have two portions, a "sleep mode detecting section" and "the rest of the processor" that is powered down to save power? The rejection is so poor and vague that the logic of the rejection cannot be deciphered. Because the rejection cannot be deciphered, the logic of the rejection cannot be responded to. The rejection is not a *prima facie* §103 rejection of Claim 51 (and its dependent Claims 52, 53, 56 and 57). The Board is requested to reverse the improper rejection.

ii. Combining Nykanen and Kulha Does Not Result In Claim 51.

Notwithstanding the impossibility of responding to the logic of an utterly incomplete rejection, Appellant responds by explaining why no combination of Nykanen and Kulha would have resulted in Appellant's invention of Claim 51. First, Nykanen, despite disclosing what is called a "power management block", nowhere discloses or suggests an "IrDA transceiver module". Claims 51-57 recite an "IrDA transceiver module" that has certain characteristics. Nykanen is not even remotely related to "an IrDA transceiver module". Nykanen relates to a piece of software functionality²² located up in the IrDA software stack, well above the physical layer, and up between layers 2 and 3. Second, Kulha does not remedy this shortcoming of the Nykanen reference. Kulha, in fact, does not even relate to IrDA at all. No combination of Nykanen and Kulha would have resulted in an "IrDA transceiver module". It is as simple as that.

The Nykanen reference is discussed briefly here to explain what Nykanen's "power management block" is and why it is not an "IrDA transceiver

dated November 10, 2004, pages 14-15.

²² In a single sentence at the end of the patent, Nykanen suggests a hardware implementation. This implementation, however, is a hardware implementation of the PM software block disposed up in the IrDA stack, and consequently is not an implementation of anything in an IrDA transceiver in the bottom physical layer. The statement in Nykanen in fact states that the "hardware block" would be "connected appropriately to the logical level above the transmission medium." (emphasis added).

module". As seen in Figure 2, Nykanen's "POWER MANAGER" (PM block) is disposed in the IrDA stack of protocol processing layers. The numbers one through seven at the left of Nykanen's Figure 2 designate the various protocol layers of the stack. Nykanen's POWER MANAGER may be disposed between the IrLAP and IrLMP layers as illustrated in Figure 2, or it may be part of the IrLMP layer (6:28), or it may be implemented as a subblock of a service (6:40). Regardless of exactly where the PM block is located in the stack, Nykanen's PM block wakes upper layers of the stack if the PM block detects activity on the underlying infrared link (5:39-40). The "indications of activity of the physical layer" are inputs to the PM block²³, they are not generated by the PM block. Nykanen's power management block "can determine when the IR link is powered down and when it is powered up" (3:25-26), but there is no disclosure in Nykanen that the power management block generates a power-up signal that causes a transceiver in the physical layer to switch from a low-power mode to a full-power mode. There is no disclosure of a low-power transceiver mode anywhere in Nykanen. To the extent that the rejection asserts that Nykanen "inherently" involves a "wake up signal" that causes the operation of an IrDA transceiver module to switch from a "low-power mode" to a "full-power mode", Appellant respectfully submits that the rejection is wrong. Such a wake up signal is not inherent. In fact, it is doubted that Nykanen turns off the physical link because if the transceiver in the physical layer were unpowered by the PM block, then presumably the physical layer could not provide the "indications of activity of the physical layer" that Nykanen's PM block evidently receives as an input. When Nykanen states in col. 5, line 32-33 that "the local PM will request the IrLAP link to be shut down", that does not mean that the physical layer has to be shut down. The term "link" here refers to the "data link" layer (see the OSI model of Figure 1). The "IrLAP link" can be "shut down" without shutting down the transceiver in the underlying physical layer.

²³ See Nykanen, col. 4, lines 62-66 that lists "Indications of activity of the physical layer" as an "input" of the power management block. Also see col. 4, lines 11-14, which somewhat more vaguely states that the "stations" are woken up by "an indication of activity of the physical layer". Also see col. 5, lines 39-41, that explain that the PM block "will wake the IrLMP and IrLAP layers" if through its inputs it detects activity on the infrared link..."

In summary: 1) Nykanen's PM block is located up in the IrDA stack, 2) Nykanen's PM block is not part of an IrDA transceiver module, and 3) Nykanen discloses nothing about an IrDA transceiver module.

iii) Objective Evidence of Non-Obviousness.

The Board of Appeals is requested to consider the objective evidence of non-obviousness, presented in the form of the Declaration of Alan Grace and the Declaration of Douglas McIntosh. The evidence is strong circumstantial evidence that subject matter of Claim 51 (and dependent Claims 52, 53, 56 and 57) was in fact NOT "obvious", despite the existence of the Nykanen and Kulha references. For an explanation of how the objective evidence relates to the claimed invention, see the discussion of the objective evidence above in connection with the first ground of rejection.

c) Claims 54 and 55.

i) No ***Prima Facie*** §103 Rejection - Rejection Incomplete.

As set forth above in connection with the first ground of rejection, Claim 54 recites a "comparator" that can switch from a "low-power state" to a "high-power state". Claim 55 recites that the "comparator" has a power lead, and that the comparator receives "more power" through the power lead in the full-power mode than in the low-power mode. (The low-power and full-power modes are modes of the overall "IrDA transceiver module", as set forth in independent Claim 51).

The §103 rejection contains no mention whatsoever of a "comparator", and certainly does not mention a "comparator" in an "IrDA transceiver module". The §103 rejection does not mention a "low-power state" of a comparator and a "high-power state" of a comparator. The §103 rejection contains no discussion of a "power lead" of a comparator. The §103 rejection contains no explanation of a comparator switching from a low-power state to a high-power state upon detection of a "9600 baud IrDA discovery signal". There are many reasons that the §103 rejection is not a ***prima facie*** rejection of Claims 54 and 55 under 35 U.S.C. §103. Reversal of the incomplete rejection is requested.

ii) Nykanen and Kulha Do Not Teach The Claimed Comparator.

Nykanen does not disclose a "comparator" having two different power states. As set forth above, Nykanen does not relate to or discuss an IrDA transceiver module. Nykanen certainly does not teach a comparator having multiple power states within an IrDA transceiver module. Similarly, Kulha contains no teaching about a "comparator" having two different power states. Kulha's wake up detector 40 (see Fig. 1; 5:8-11) is evidently powered all the time so that it can detect an incoming wake-up signal from the vehicle transceiver 12 (see Figure 1). When wake up detector 40 receives the wake up signal from transceiver 12, it wakes up microprocessor 36 into the microprocessor's full operational mode. There is no disclosure that the wake up detector 40 should have two different power states. There is certainly no disclosure about a "comparator" in wake up detector 40 having different power states. Accordingly, because neither Nykanen nor Kulha includes a comparator having two different power modes, no combination of elements from Nykanen and Kulha would have such a comparator either. Reversal of the improper §103 rejection of Claims 54 and 55 is requested.

3. CONCLUSION

First, the submitted objective evidence of non-obviousness indicates that Zilog is the only company to make and sell an IrDA transceiver module that has the claimed low-power mode, and that this is the case despite Zilog's making millions of dollars selling the part and despite there being an economic incentive for Zilog's competitors to make an IrDA transceiver module embodying the claimed invention. Customers specifically buy the module due to its having the claimed low-power mode. Appellant submits that these facts constitute circumstantial evidence that points to the non-obviousness of the invention, for if the invention was "obvious" and if there is money to be made selling it, then logic would indicate that Zilog would not be the only company in the market making the device. Yet, as far as Appellant is aware and as far as the evidence shows, Zilog is and remains the only company in the market making the device. The

submitted evidence of non-obviousness to not to be put into a legal pigeonhole, but rather is to be fairly considered for what it indicates in the present unique situation.

Second, the §103 rejections based on Kohler, the IrDA specification, Selin and/or Kulha are improper because there is no motivation or suggestion or teaching to combine as the §103 rejections assert. None of the cited references recognizes any problem with power consumption in conventional IrDA transceiver modules. As such, one of ordinary skill would not have been motivated to modify an IrDA transceiver module. The only two references that relate to IrDA (the IrDA specification and Nykanen), fail to disclose or suggest an IrDA transceiver module having the low-power mode as claimed, and this is the case despite the Nykanen reference being concerned with reducing power consumption in an IrDA system.

Appellant submits that the subject matter of Claims 51-57 is non-obvious and patentable under 35 U.S.C. §103, as properly applied. The Board is requested to reverse the §103 rejections of Appellant's invention of Claims 51-60.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Mail Stop Appeal Brief - Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

By T. Lester Wallace
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J. CLAIMS APPENDIX

[Claims 1-50 have been canceled. Claim 50 is canceled by an Amendment Under MPEP 1206 that is filed along with this Appeal Brief.]

51. An IrDA transceiver module having a low-power mode and a full-power mode, comprising:

an IrDA discovery signal detection circuit that generates a power-up signal upon detection of a 9600 baud IrDA discovery signal, the power-up signal causing the operation of the IrDA transceiver module to switch from the low-power mode to the full-power mode.

52. The IrDA transceiver module of Claim 51, wherein the low-power mode is a low-power listening mode, and wherein said switching from the low-power mode to the full-power mode enables the IrDA transceiver module to generate an IrDA transmission.

53. The IrDA transceiver module of Claim 51, wherein the IrDA transceiver module includes only one infrared receiver.

54. The IrDA transceiver module of Claim 53, further comprising:

a comparator, the IrDA discovery signal detection circuit causing the comparator to switch from a first low-power state to a second high-power state upon detection of the 9600 baud IrDA discovery signal.

55. The IrDA transceiver module of Claim 54, wherein the comparator has a power lead, the comparator receiving more power through the power lead in the full-power mode than in the low-power mode.

56. The IrDA transceiver module of Claim 51, wherein the switching from the low-power mode to the full-power mode enables full IrDA signal transmission and receipt.

57. The IrDA transceiver module of Claim 51, wherein the 9600 baud discovery signal is transmitted from an appliance, and wherein the switching from the low-power mode to the full-power mode enables the IrDA transceiver module to reply to the appliance by transmitting an infrared signal to the appliance.

58. An IrDA transceiver comprising an infrared receiver, an infrared transmitter and an IrDA discovery signal detection circuit, the IrDA transceiver having a low-power standby mode and a full-power mode, wherein detection of a 9600 baud signal by the IrDA discovery signal detection circuit causes the IrDA transceiver to switch from the low-power standby mode to the full-power mode, said detection of the 9600 baud signal causing the IrDA transceiver to be enabled for full infrared signal receipt.

59. An IrDA transceiver comprising:

infrared transmitter circuitry;

infrared receiver circuitry; and

means for enabling full infrared signal transmission and receipt upon detection of a 9600 baud IrDA discovery signal.

60. The IrDA transceiver of Claim 59, wherein the means detects the 9600 baud IrDA discovery signal and thereupon increases an amount of power supplied to the infrared receiver circuitry.

K. EVIDENCE APPENDIX

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: T. Allan Hamilton

Assignee: ZiLOG, Inc.

Title: "System And Method For Providing An Improved Standby Mode
For Infrared Data Transceivers"

Appl. No.: 09/135,154

Filing Date: August 17, 1998

Examiner: Zimmerman, Brian A.

Art Unit: 2635

Docket No.: ZIL-254 (formerly CLB5-B73)

Mail Stop RCE
COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF ALAN G. GRACE

I, Alan G. Grace, hereby declare as follows:

1. I am employed by Zilog, Inc., the assignee of the above-identified application. My title at Zilog is Fellow. There are only three engineers with the title of Fellow at Zilog. I am the principal engineer overseeing the design of all IrDA transceiver modules designed and manufactured by Zilog.
2. I have approximately eight years of experience in the IrDA transceiver module field.
3. My experience in the IrDA field began in the 1996 time frame when I was employed by Siliconix (now Vishay). I spent three years at Siliconix, working in the design of IrDA transceiver modules.
4. In 1999, I left Siliconix. I cofounded an IrDA transceiver module company called Calibre Inc. T. Allan Hamilton, the listed inventor on the above-

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identified application, is another cofounder of Calibre Inc. The above-identified application was filed while both T. Allan Hamilton and I were working at Calibre.

5. Calibre Inc, including its IrDA business, was then sold to Zilog, Inc. Zilog, Inc. is therefore the current assignee of the above-identified application. As a consequence of Zilog, Inc.'s acquisition of Calibre, I became employed by Zilog, Inc. I continue to be employed by Zilog, Inc. up until the present.

6. Zilog, Inc. makes a family of IrDA transceiver modules that includes an IrDA discovery signal detector circuit. The IrDA transceiver modules have a low-power sleep mode. The low-power sleep mode is an attribute of the IrDA discovery signal detector circuit. While in the low-power sleep mode, the IrDA transceivers cannot receive ordinary high baud rate IrDA signals. If the IrDA discovery signal detector detects a 9600 baud IrDA discovery signal while in the sleep mode, then the IrDA discovery signal detector circuit causes transceiver operation to switch from the low-power sleep mode to a full-power mode. Switching to the full-power mode enables the IrDA transceiver module to receive higher baud rate IrDA signals.

7. Zilog, Inc. also makes an older family of less expensive IrDA transceiver modules. IrDA transceiver modules of this family do not include an IrDA discovery signal detector circuit.

8. In the past several years, several potential customers have indicated a desire to buy Zilog IrDA transceiver modules that have the IrDA discovery signal detector specifically because these IrDA modules consume less power when in their sleep mode.

9. Recently, one customer inquired about purchasing Zilog IrDA transceivers that have the IrDA discovery signal detector circuit. I suggested to

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the customer that an older Zilog IrDA transceiver module (one that does not have the IrDA discovery signal detector circuit) would be more appropriate for the customer's needs because that older IrDA transceiver module met the customer's performance requirements and it was less expensive than the newer Zilog IrDA transceiver having the IrDA discovery signal detector. The customer responded that they wanted the more expensive Zilog IrDA transceiver modules because the more expensive modules had the low-power sleep mode, whereas the older less expensive modules I proposed using did not have the low-power sleep mode.

10. Zilog, Inc., for each of the past five years, has sold approximately one million dollars worth of IrDA transceiver modules having the IrDA discovery signal detector circuit. I believe that a substantial proportion of Zilog's sales of IrDA transceivers having the IrDA discovery signal detector circuit are purchased at least in part due to the low-power sleep mode capability of those devices.

11. Throughout the past six years, I have endeavored to keep myself informed about all IrDA transceiver modules available on the market, and what their capabilities are. Current manufacturers of IrDA transceiver modules for the US market include Hewlett-Packard and Vishay (formerly Siliconix). It is one of my job responsibilities to keep myself aware of the technical capabilities of the IrDA transceiver module market.

12. I consider myself well informed and knowledgeable about the capabilities of IrDA transceiver modules that have been on the market throughout the past six years.

13. To my knowledge, no company other than Zilog, Inc. (and Calibre before it) currently produces (or has ever produced) an IrDA transceiver module having an IrDA discovery signal detection circuit, a low-power sleep mode and a

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higher-power normal operation mode, wherein the IrDA discovery signal detection circuit, upon detecting a 9600 baud IrDA discovery signal, switches transceiver operation from the low-power sleep mode to the higher-power normal operation mode.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the above-identified application or any patent issued thereon.

Dated: May 26, 2004


Alan G. Grace
Fellow
Zilog, Inc.
532 Race Street
San Jose, CA 95126

I hereby certify that this is being deposited with the U.S. Postal Service as Express Mail "Post Office to Addressee" service under 37 C.F.R. §1.10 on the date indicated below and is addressed to:

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450.

By 
T. Lester Wallace

Express Mail Label No: ER 779677466 US

Date of Deposit: May 26, 2004

DECLARATION

I, DOUGLAS A. MCINTOSH, hereby declare as follows:
(print name here)

1. I work for a company that has purchased or is purchasing IrDA transceivers from Zilog. The company name is listed below under my signature.

2. It is my understanding that the Zilog ZHX1403MA115TH IrDA transceiver module has a low-power sleep mode and an IrDA discovery signal detector circuit. While in the low-power sleep mode, the IrDA transceiver cannot receive ordinary high baud rate IrDA signals. If the IrDA discovery signal detector detects a 9600 baud IrDA discovery signal while in the sleep mode, then the IrDA discovery signal detector circuit causes transceiver operation to switch from the low-power sleep mode to a full-power mode. Switching to the full-power mode enables the IrDA transceiver module to receive higher baud rate IrDA signals that it cannot receive in the low-power sleep mode.

3. To my knowledge, the Zilog ZHX1403MA115TH is the only IrDA transceiver module on the market that has the low-power sleep mode described above.

4. I am aware of no company other than Zilog that makes, or has ever made, an IrDA transceiver module having the low-power sleep mode described above.

5. The low-power sleep mode described above has been and is an important and significant factor in my company's decision to purchase the ZHX1403MA115TH IrDA transceiver.

I hereby declare under the penalty of perjury that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true.

7/20/05
Date

[Signature]
Signature

Title: SR. DESIGN ENGINEER

Company Name: DART CONTROLS, INC.

L. RELATED PROCEEDINGS APPENDIX

(none)